

3M Advanced Materials Division

# 3M™ Silicon Carbide

## A versatile specialist

### Introduction

3M Technical Ceramics provides one of the widest product portfolios of sintered silicon carbide in the market. The microstructure and excellent physical properties of 3M™ Silicon Carbide allow these materials to withstand some of the most demanding conditions in a wide variety of industries. Components

made of 3M silicon carbide have an excellent track record over decades of use, and applications for these versatile materials continue to expand. Our experienced scientists will work with you to develop ceramic-based solutions tailored to your specifications, while meeting your logistical requirements.

### Features and Benefits

- Tribological performance under high load (pressure, sliding speed, temperature)
- High resistance to wear
- Resistance to corrosion in aggressive media
- Thermal shock resistance
- Low distortion under thermal loads



3M™ Silicon Carbide Pump Shafts



3M™ Silicon Carbide Gas Sealing Rings used for compressors in the oil and gas processing industry.



3M™ Silicon Carbide Sliding Bearings used in quality chemical and industrial pumps as well as in stirrers and mixers for the chemical, pharmaceutical and food processing industry.



3M™ Silicon Carbide Mechanical Seal Rings are particularly suitable for heavy-duty applications, i.e. the handling of contaminated fluids, abrasive fluids and/or extremely corrosive fluids.



3M™ Silicon Carbide Laser-structured Sliding Bearings (left: radial bearing, right: thrust bearings) used in highly-loaded chemical pumps, in magnetic couplings for hermetically sealed pumps and in stirrers for chemical and pharmaceutical processes.

# Grades of 3M™ Silicon Carbide

## The all-purpose grade

### 3M™ Silicon Carbide Grade F –

Good chemical resistance, low specific density, high hardness and wear resistance, outstanding thermal conductivity properties and resistance to fluctuations in temperature. 3M silicon carbide grade F combines all these specific advantages of sintered silicon carbide, particularly for bearings and seals for use in pumps.

## The corrosion-resistant grade

### 3M™ Silicon Carbide Grade C –

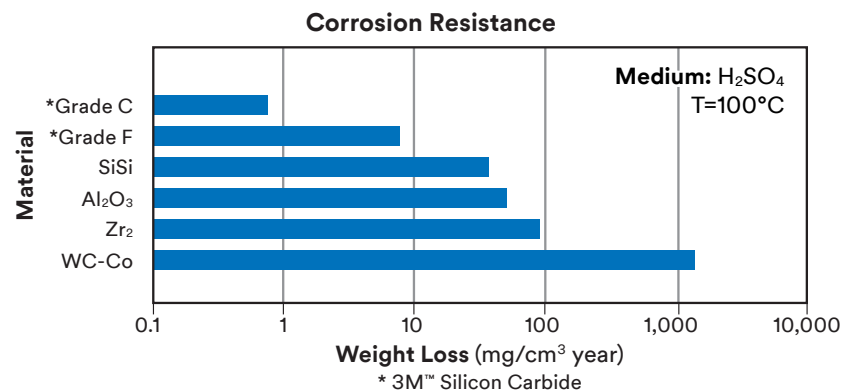
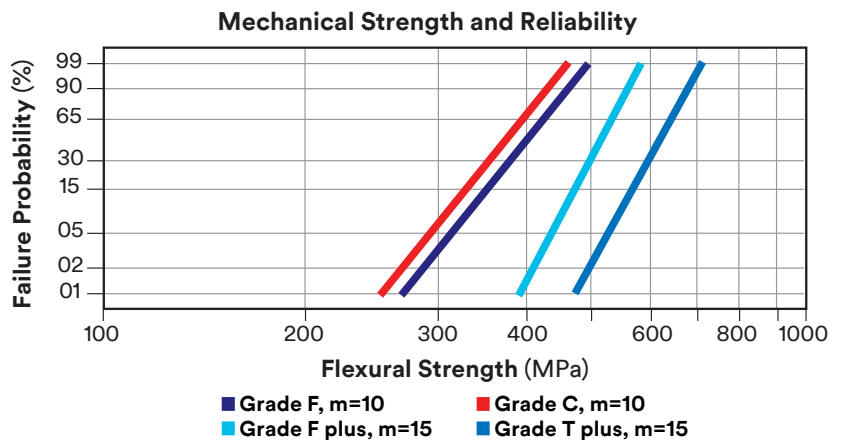
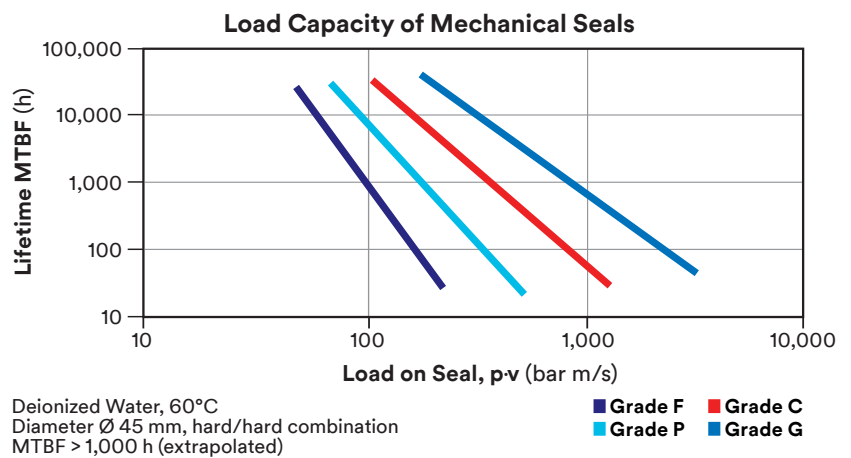
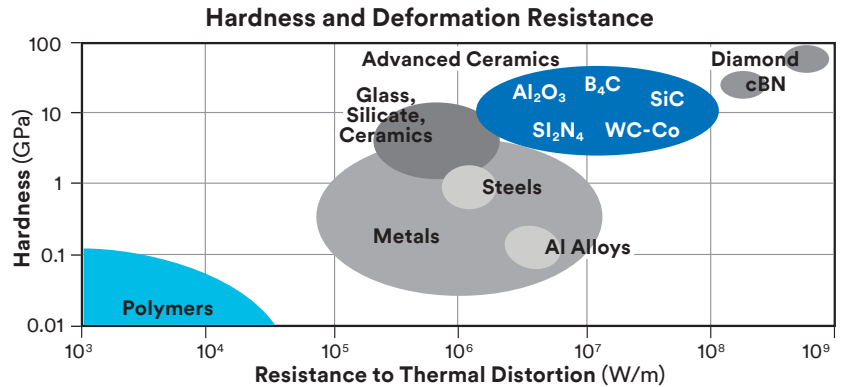
Resistance to corrosion is a particular problem where aggressive chemicals or hot water are being transferred, e.g. by circulating pumps. 3M silicon carbide grade C has proved highly effective in corrosive environments.

## The high-strength grades

**3M™ Silicon Carbide Grade F plus and Grade T plus** – Two high-density materials achieve the optimum strength for silicon carbide. These non-porous, fine-grained grades are designed to provide very high mechanical strength and edge stability. 3M silicon carbide grade F plus and grade T plus are ideal materials for complex thermal and mechanical loads.

## The tribological grades

**3M™ Silicon Carbide Grade P and Grade G** – Improved dry run and mixed friction properties prove especially valuable in sliding and friction systems.



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